

Work Order ID 67236

Monday, March 14, 2011 9:44:49 AM

Blue



Page 1

Item ID: D206-667-103BL

Accept



Setup Start



Revision ID:

Stop



Item Name: Crosstube Fwd, Blue

Start Date: 3/14/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 3/25/2011 Req'd Qty: 1.00

Customer:

Reference:

Run Start



Approvals: Process Plan: CL Date: 11/03/14 Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr \	Revision Nbr
------------	--------------

D206-667-143	<u>11-03-14</u> C
--------------	-------------------

100

0.00



DOCUMENT CONTROL

DC

Memo

0.00

Document Control

Photocopy bluefile and create labels as per PPP D206-667-103 CHG004

*Subtotal*

110

Pick Kit

0.00



Packaging

Packaging

Memo

0.00

Packaging

*DP*

*11-3-24*

120

0.00



BENDING MACHINE - CROSSTUBES

CNC Bend 2

Memo

0.00

CNC Alpha 160 Bender

Bend tube as per Dwg D206-667-143 using CNC bender program

*DP*

*11-3-24*

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
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**NOTE:** Date & initial all entries

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Process Plan:

Date:

Tooling:

Date:

Run Start

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

130

QC15- Crosstube Dimensional Check

0.00



QC

Memo

0.00

Quality Control

Sub 125

W/O:		WORK ORDER CHANGES					
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Run Start  
StopSequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool # Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

140

0.00



Crosstubes

Crosstubes

Memo

0.00

Crosstubes

1-Drill holes & ream using drill Jig DT8541 & DT8542 as per Dwg D206-667-143. Drill all (3) top holes.

3-Flip tube and switch drilling Jigs from right to left, left to right. Locate Jigs off existing holes using "T" pins.

4-Drill pilot holes using drill Jig DT8541 & DT8542 as per Dwg D206-667-143. Drill only the top (2) holes.

5-Drill pilot holes as per Dwg D206-667-143. Drill only the top (2) holes.

6-Drill Fwd rivet holes using drill Jig DT8787FWD as per Dwg D206-667-143. Note: Fwd side has 3x top holes.

7-Drill Aft rivet holes using drill Jig DT8787AFT as per Dwg D206-667-141.

8-C'sink holes as per Dwg D206-667-143. Allow rivet to sit below surface to compensate for paint.

9-Scribe part # and batch # using vibrating stylus as per Dwg D206-667-143 Inside of Cuff (Do not engrave on outside of tube)

10-Deburr & Inspect for surface damage. Repair damage within limits as per Dwg D206-667-143

ET  
SAP  
11-03-25

DP  
11-3-25

W/O:		WORK ORDER CHANGES					
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Run Start

Stop

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150  HandFXtube Hand Finishing Crosstubes	Crosstubes Chemical Conversion  Memo	0.00 0.00		3AD 11-03-25					
160  QC Quality Control	QC3- Inspect Part Finish  Memo	0.00 0.00		8 u603/31					
170  QC Quality Control	QC5- Inspect part completeness to step on W/O  Memo	0.00 0.00		8 u603/31					

W/O:		WORK ORDER CHANGES					
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Approvals:

Process Plan:

Date:

Tooling:

Date:

Run Start

QC:

Date:

SPC (Y/N):

Date:

Stop

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

180

Outsource process - NDT per QSI038 4.1

0.00



Outsource2

Memo

0.00

Outsource process - NDT

CROSSTUBES

CL 11/03/29 (1)  
P013743 11/03/30 Pro →

190

Packaging

0.00



Packaging

Memo

0.00

Packaging

Ensure copy of NDT results attached to work order.

11/3/09 (1)  
11/3/31 (1)

200

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

11-03-30

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: D206-667-103BL PAR #: N/A Fault Category: X-tubes NCR: Yes No DQA: 11 - Date: 11.04.21  
 Resolution: rework Disposition: rework QA: N/C Closed: 11/04/21 5

NCR: <u>67236</u>		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			
<u>11/03/21</u>	<u>#180</u>	<u>Found many indication / marks At NDT testing R.C. process</u>	<u>CP</u> <u>11.03.21</u>	<u>→ many marks to grind off so reg.ing entire tube + re ABOD in AS per dist-005</u>	<u>SAW</u> <u>11-03-20</u>	<u>S</u> <u>11/03/31</u>	<u>CP</u> <u>11.03.21</u> <u>DS/042</u>	<u>S</u> <u>11/03/29</u>
			<u>DS/042</u>	<u>→ re NDT tubes P/O #13734</u>	<u>11-03-20</u>			
			<u>CP</u> <u>11.03.21</u>	<u>→ re receive tube back in to shop + attach copy of results</u>	<u>11/13/31</u>	<u>S</u> <u>11/03/31</u>	<u>CP</u> <u>11.03.21</u> <u>DS/042</u>	<u>S</u> <u>11/03/29</u>

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Run Start



Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/  
Work Center ID

Operation  
Description

Set Up/  
Run Hours

Tool ID

Tool #

Plan  
Code

Accept  
Qty

Reject  
Qty

Reject  
Number

Insp.  
Stamp

205

Spray Painting per QSI005 4.2

0.00



SprayPaint

Memo

0.00

Spray Painting

Spray Painting: 115967  
prime grey B: 115985  
spray paint delfleet blue B: 117113  
clear delfleet B: 117113

ml 11 04 04 ①

220

QC14- Inspect Spray Paint

0.00



QC

Memo

0.00

Quality Control

Wrap in plastic bag to protect from scratches

11-04-05

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

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Approvals: Process Plan: \_\_\_\_\_ Date: \_\_\_\_\_ Tooling: \_\_\_\_\_ Date: \_\_\_\_\_

Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

230

0.00



Crosstubes

Crosstubes

Memo

0.00

1-Install support using 0.03" to 0.06" thick layer of magnobond 6398 per QSI 015. Let cure for 12h after installation and prior to packaging. Note: (2) Aft holes should be facing up.  
A/R Magnobond 6398 : 116677 exp. 08/2011

2-Install supports and clamps as per Dwg D206-667-143. Torque clamps to 80-100 in lb

ml 11-04-06

3-Install nut plates as per Dwg D206-667-143. Touch-up rivet heads with Imron paint.

ml 11 04 05 (1)

240

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

8 uloulo

(K)

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

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Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

250

Pick Kit

0.00



Packaging

Memo

0.00

Packaging

11/4/8 SD

260

QC4- 100% Inspect kits for completeness

0.00



QC

Memo

0.00

Quality Control

8 u104/02

C

270

Packaging

0.00



Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPP D206-667-103

Location: \_\_\_\_\_

PPP Rev: \_\_\_\_\_

Pau/8/9 C

W/O:		WORK ORDER CHANGES					
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Stop



QC: \_\_\_\_\_ Date: \_\_\_\_\_ SPC (Y/N): \_\_\_\_\_ Date: \_\_\_\_\_

Sequence ID/  
Work Center IDOperation  
DescriptionSet Up/  
Run Hours

Tool ID

Tool #

Plan  
CodeAccept  
QtyReject  
QtyReject  
NumberInsp.  
Stamp

280

QC21 - Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

11/4/11

MF  
11-04-11

W/O:		WORK ORDER CHANGES					
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# Picklist Print

Monday, March 14, 2011 9:44:45 AM

Page 1

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Parent Item: D206-667-103BL

Parent Item Name: Crosstube Fwd, Blue

Start Date: 3/14/2011

Required Date: 3/25/2011

Start Qty: 1.00

Required Qty: 1.00

Comments: IIP RevA: new issue DD .09.11.23 verified by:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

D206-667-103TRN Manufactured No

110

Each

4.0000

1

1



Crosstube Turning DetailL

Location

Loc Qty

Loc Code

LG003

B67387

4

64948

1

64949

1

66441

1

66443

1

DP 11-3-24

D2873-043 Manufactured No

230

Each

38.0000

2

2



Nut Plate Assembly

Location

Loc Qty

Loc Code

LG

36

65375

16

66898

20

ST

2

60981

2

W 11.04.06

D2873-045 Manufactured No

230

Each

36.0000

2

2



Nut Plate Assembly

Location

Loc Qty

Loc Code

LG

36

60982

4

63498

1

65132

11

65992

20

W 11.04.06

W/O:		WORK ORDER CHANGES					
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Required Date: 3/25/2011

Start Qty: 1.00

Required Qty: 1.00

D2891-1 Manufactured No

230 Each

35.0000

2

2



2.25 Support

Blue



ml 11-04-05

Location

Loc Qty

Loc Code

LG

30

53773

20

62595

10

LG051

5

50952

5

D3595-063-395 Manufactured No

230 Each

107.0000

4

4



RUBBER CUSHION



ml 11-04-05

Location

Loc Qty

Loc Code

FP

10

44667

10

LG

97

63368

37

65361

60

cut (4)0.063" X 3.95"

MS20601-AD4W8 Purchased No

230 Each

282.0000

14

14



RIVET



ml 11-04-06

Location

Loc Qty

Loc Code

LG

100

117106 x 7

100

LG051

78

116119 x 7

78

ST322

104

112203

104

Monday, March 14, 2011 9:44:46 AM

Shop Packet Print

Page 2

W/O:		WORK ORDER CHANGES					
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Start Date: 3/14/2011

Required Date: 3/25/2011

Start Qty: 1.00

Required Qty: 1.00

MS21920-20

Purchased

No

230

Each

53.0000

4

4



Clamp (per MIL-DTL-8783C)



nl 11-04-05

Location

Loc Qty

Loc Code

LG

3

112624

2

114687

1

LG050

50

116799

50

AN5-30A

Purchased

No

250

Each

72.0000

4

4



BOLT



SP

Location

Loc Qty

Loc Code

ST339

72

114941

22

116003

50

AN5-32A

Purchased

No

250

Each

131.0000

4

4



Bolt



11/4/8 SP

Location

Loc Qty

Loc Code

ST340

131

115016

21

115108

50

115589

60

4

W/O:		WORK ORDER CHANGES					
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Parent Item Name: Crosstube Fwd, Blue

Start Date: 3/14/2011

Required Date: 3/25/2011

Start Qty: 1.00

Required Qty: 1.00

AN5-7A

Purchased

No

250

Each

208.0000

10

10



Bolt

Location

Loc Qty

Loc Code

ST337

208

113149

100

115936

8

116516

100

AN960JD516

NAS1149D0563J

Purchased

No

250

Each

34.0000

18

18



Washer

Location

Loc Qty

Loc Code

ST298

34

103694

18

107534

12

109287

4

AN970-4

Purchased

No

250

Each

118.0000

12

12



Washer

Location

Loc Qty

Loc Code

ST344

18

115936

18

ST349

100

116900

100

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

NOTE: Date & initial all entries

# Picklist Print

Page 5

Monday, March 14, 2011 9:44:46 AM

Work Order ID: 67236

Parent Item: D206-667-103BL

Parent Item Name: Crosstube Fwd, Blue



Start Date: 3/14/2011

Required Date: 3/25/2011

Start Qty: 1.00

Required Qty: 1.00

MS21042L5

Purchased

No

250

Each

966.0000

4

4



Nut



11/14/85

Location

Loc Qty

Loc Code

ST300

966

114813

26

115594

244

116105

496

116548

200

4

Monday, March 14, 2011 9:44:46 AM

Shop Packet Print

Page 5

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

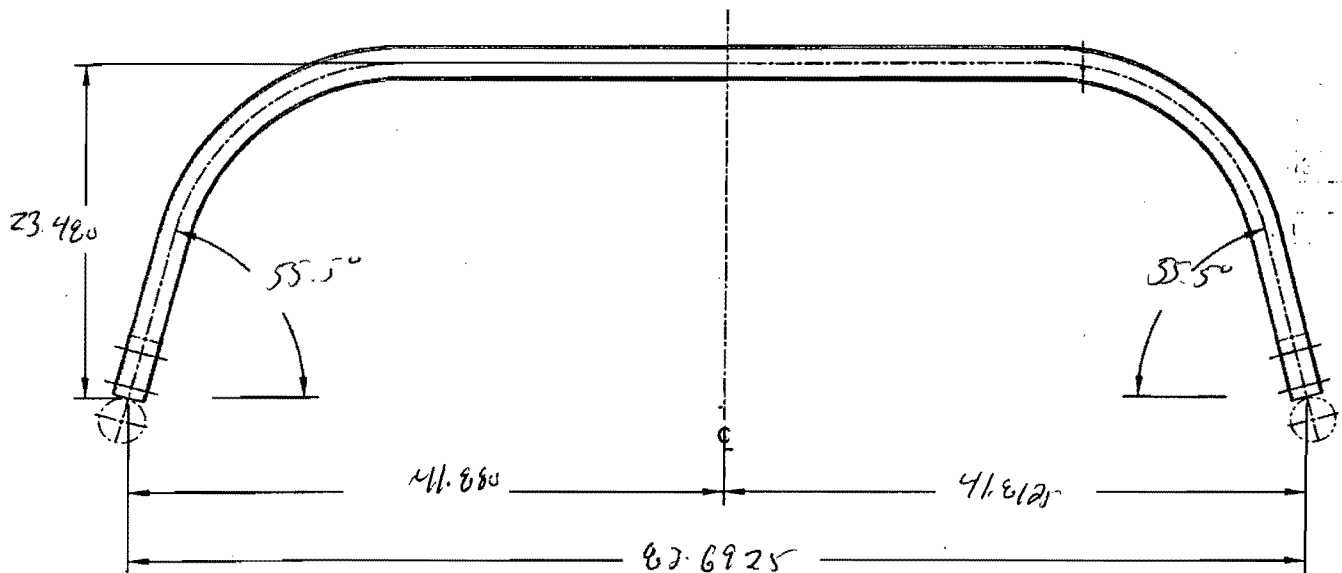
Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

<b>DART AEROSPACE LTD</b>		<b>Work Order:</b> 67236
<b>Description:</b> Crosstube High Fwd (206L)		<b>Part Number:</b> D206-667-103
<b>Inspection Dwg:</b> D206-667-143	<b>Rev:</b> C	<b>Page 1 of 1</b>

Required Dimension	Min	Max
Height	23.39	23.65
1/2 Span	41.79	42.05
Angle	54	56
Total Span	83.58	84.10



Comments

QC15 Inspection	8
Date	11/03/25

Rev	Date	Change	Revised by	Approved
A	07.02.06	New Issue	KJ/JM	
B	09.06.26	Dimensions updated per Dwg Rev C	KJ	
C	09.10.22	Minimum height dimension revised	KJ	<i>[Signature]</i>



Item	Qty -143	Part Number	Description
1	X	D206-667-143	CROSSTUBE ASSEMBLY (206L HIGH FWD)
2	1	D6002-115	CROSSTUBE
3	2	D2873-043	NUT PLATE
4	2	D2873-045	NUT PLATE
5	2	D2891-1	SUPPORT
6	4	D3595-063-395	RUBBER CUSHION
7	4	MS21920-20	CLAMP (OR MS21920-21)
8	14	MS20601AD4W8	RIVET (OR NAS9302B-4-8)
9	A/R	MAGNOBOND 6398	ROCKWELL SPECIFICATION RBO-120-023 ADHESIVE (TEXTRON/BELL SPEC. 299-947-100, TYPE II, CLASS 2 ADHESIVE)

CL 11/03/14  
W/O. 67236

#### GENERAL NOTES:

- 1) MATERIAL: MANUFACTURED FROM D6002-115  
FINISHED LENGTH = 104.98±0.020
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1  
PRIME INSIDE AND OUTSIDE PER DART QSI 005 4.2  
PAINT OUTSIDE PER DART QSI 005 4.2
- 3) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED.
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED.
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX.
- 6) IDENTIFICATION: SCRIBE DART PART NUMBER "D206-667-143" AND BATCH NUMBER ON INSIDE OF CUFF USING VIBRATING STYLUS.
- 7) WEIGHT: 15.5 lbs
- 8) PART IS SYMMETRIC ABOUT CENTERLINE.
- 9) RUN CUTTER OFF PART WHERE INDICATED. BLEND OUT EDGE LONGITUDINALLY, TRANSITION SHOULD BE SMOOTH.
- 10) BEND PROGRESSIVELY WITH A MINIMUM OF 10 PASSES. MAXIMUM TUBE FLATTENING DUE TO BENDING IS 6% BASED ON O.D.
- 11) LIQUID PENETRANT INSPECT OUTSIDE SURFACE OF CROSSTUBE PER QSI 038.
- 12) INSTALL D2891-1 SUPPORT USING 0.03" TO 0.06" THICK LAYER OF MAGNOBOND 6398 PER QSI 015. LET CURE FOR 12 HOURS AFTER INSTALLATION AND PRIOR TO PACKAGING.
- 13) INSTALL MS21920-20 CLAMPS (OR -21) WITH D3595-063-395 RUBBER CUSHIONS TO SECURE THE D2891-1 SUPPORT ON TOP SIDE OF THE CROSSTUBE. ENSURE CLAMP MECHANISMS ARE LOCATED ON CROSSTUBE SUPPORTS.
- 14) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 15) TORQUE CLAMPS 80 TO 100 IN-LB. ENSURE AT LEAST 1.5 THREADS ARE SHOWING IN SAFETY AND THAT NUT HAS NOT BOTTOMED-OUT AFTER TORQUING.

RELEASED  
11/11/14

C	REVISE GENERAL NOTES/PART LIST (ZN D7-1); REORGANIZED VIEWS AND REFORMATTED DRAWING TO CURRENT STANDARDS. D3595-063-395 WAS D2855-400-694 (ZN D6-2 & A5-2); REMOVED REF. & ADD TOLERANCE (ZN D3-3, C4-3, C5-3); RELOCATED FLAG #6 (ZN A8-3) PER NCR 210; MOVED TURNING DETAIL & UPDATED TOLERANCE TO SHEET 4.	RF	08.11.06
B	ADD HOLES AND NUT PLATES FOR COMPATABILITY WITH BHT/AA SKUDTUBES	PH	05.07.26
A	NEW ISSUE	CP	00.11.17
REV.	DESCRIPTION	BY	DATE
DESIGN	RF	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
DRAWN	RF	DRAWING NO.	REV. C
CHECKED	RF	D206-667-143	SHEET 1 OF 4
MFG. APPR.	RF	TITLE	SCALE
APPROVED	RF	CROSSTUBE ASS'Y (206L HIGH FWD)	NTS
DE APPR.	RF	COPYRIGHT © 2000 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	
DATE	08.11.06		

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

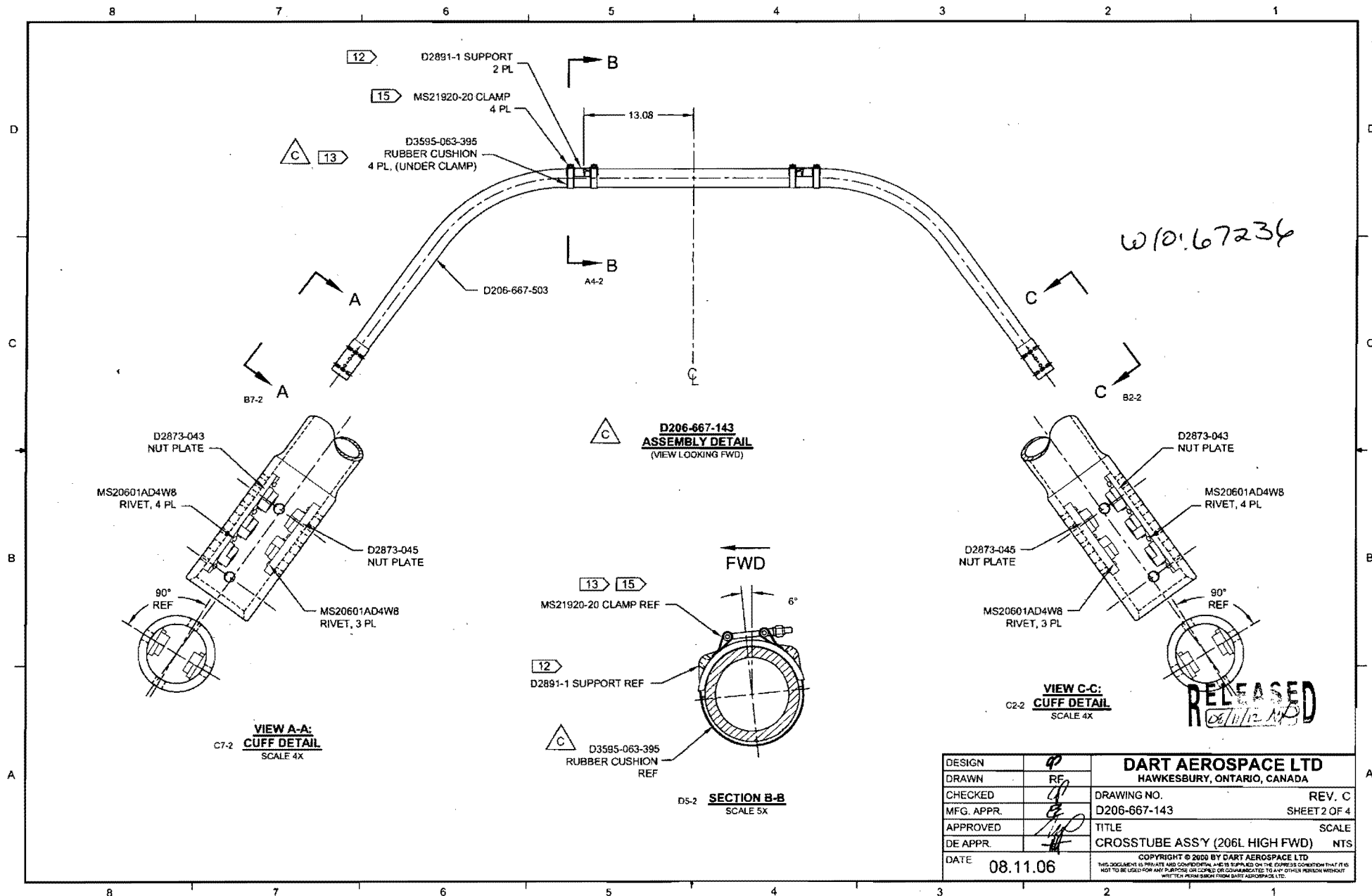
Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries





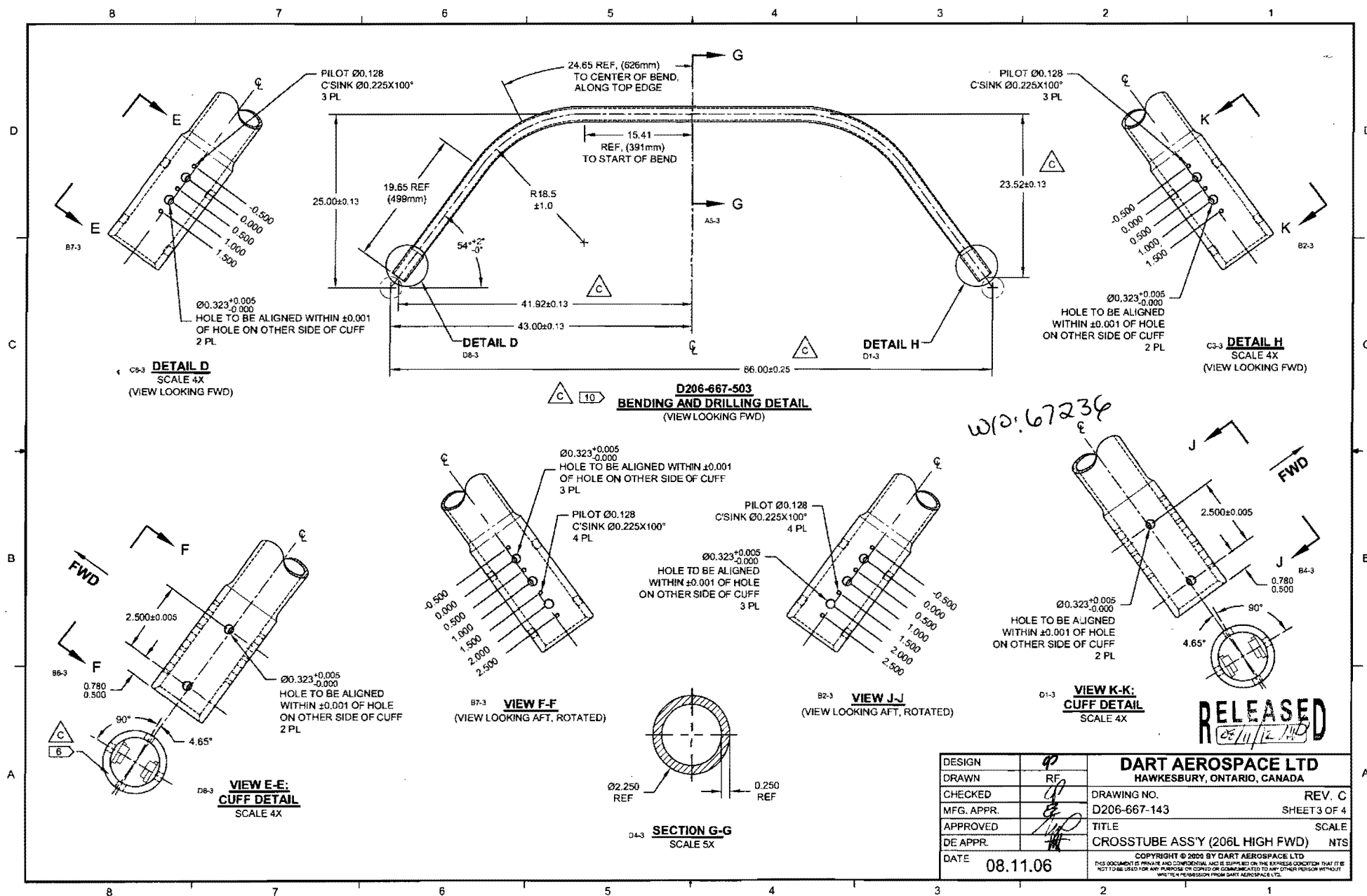
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries



DESIGN	4P	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	4P	DRAWING NO.	REV. C
MFG. APPR.	4P	D206-667-143	SHEET 3 OF 4
APPROVED	4P	TITLE	SCALE
DE APPR.	4P	CROSSTUBE ASS'Y (206L HIGH FWD)	NTS
DATE	08.11.06	COPYRIGHT © 2005 BY DART AEROSPACE LTD <small>THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED IN ANY MANNER WITHOUT THE WRITTEN PERMISSION FROM DART AEROSPACE LTD.</small>	

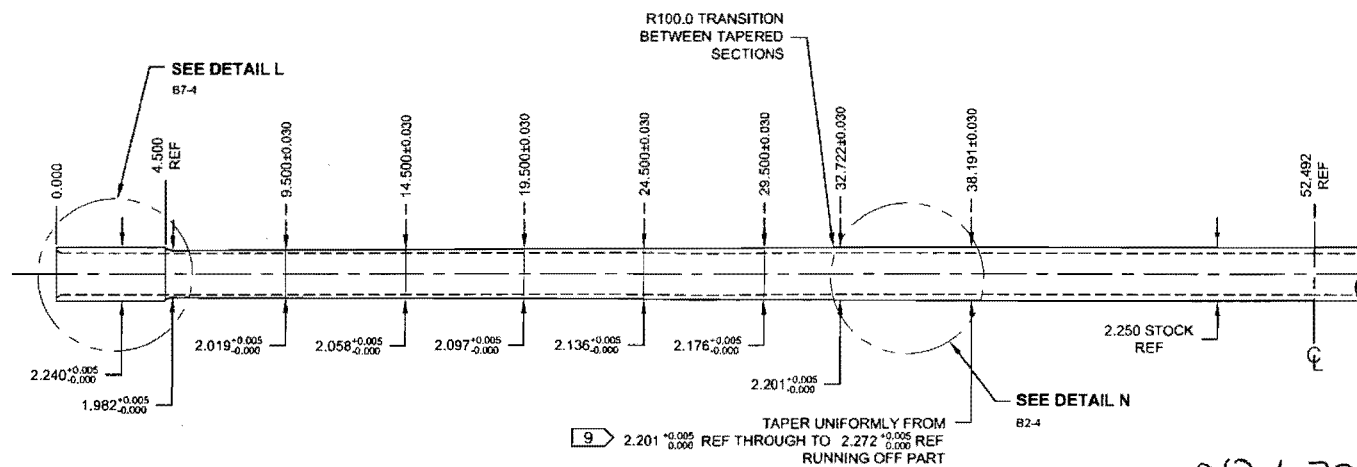
W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

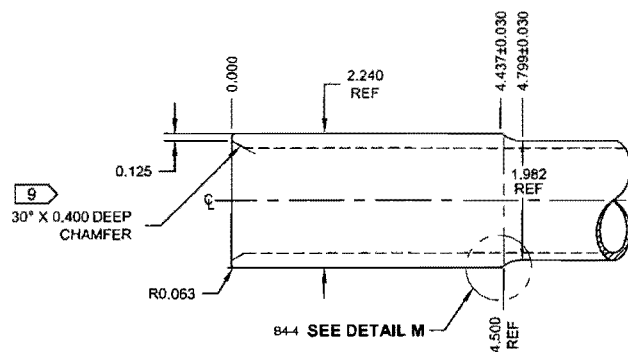
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DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

**NOTE:** Date & initial all entries

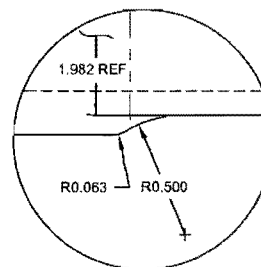


W12.67236

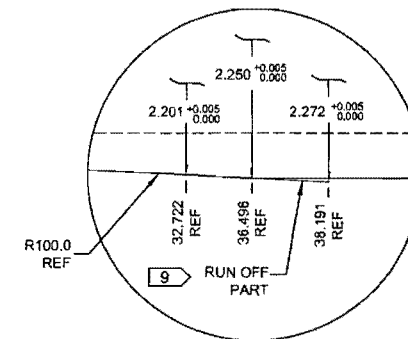
**TURNING DETAIL**



**DETAIL L:  
CROSSTUBE CUFF**  
NOT TO SCALE



**DETAIL M:  
CUFF TRANSITION**  
NOT TO SCALE



**DETAIL N:  
TAPER RUN-OFF**  
NOT TO SCALE

**RELEASED**

DESIGN	4	<b>DART AEROSPACE LTD</b>	
DRAWN	RF	HAWKESBURY, ONTARIO, CANADA	
CHECKED	4	DRAWING NO.	REV. C
MFG. APPR.	4	D206-667-143	SHEET 4 OF 4
APPROVED	4	TITLE	SCALE
DE APPR.	4	CROSSTUBE ASS'Y (206L HIGH FWD)	NTS
DATE	08.11.06	COPYRIGHT © 2000 BY DART AEROSPACE LTD	
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W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: \_\_\_\_\_ PAR #: \_\_\_\_\_ Fault Category: \_\_\_\_\_ NCR: Yes No DQA: \_\_\_\_\_ Date: \_\_\_\_\_

Resolution: \_\_\_\_\_ Disposition: \_\_\_\_\_ QA: N/C Closed: \_\_\_\_\_ Date: \_\_\_\_\_

NCR:		WORK ORDER NON-CONFORMANCE (NCR)						
DATE	STEP	Description of NC Section A	Corrective Action Section B			Verification Section C	Approval Chief Eng	Approval QC Inspector
			Initial Chief Eng	Action Description Chief Eng	Sign & Date			

• **NOTE:** Date & initial all entries



Dart Aerospace Ltd.  
1270 Aberdeen Street  
Hawkesbury, ON K6A 1K7  
Tel: 613 632 9577  
Fax: 613 632 1053

## PURCHASE ORDER

Purchase Order ID PO13734

Purchase Order Date 3/29/2011

PO Print Date 3/29/2011

Page Number 1 of 2

Order From :

VC-ACU002

ACUREN  
2190 SPEERS ROAD  
OAKVILLE, ON L6L 2X8  
CA

Contact Name

Vendor Phone

613 931 1261

Vendor Fax

613 931 2777

Vendor Account Nbr

Buyer

Chantal Lavoie

Requisition Nbr

Tax Resale Nbr

10127-2607

Terms

Net 30

Currency

CAD

FOB

Destination-Collect

Ship To :

DART AEROSPACE LTD

1270 ABERDEEN  
HAWKESBURY, ON K6A 1K7  
CANADA

FAKED  
08/10/2011

Line Nbr	Reference Revision ID Vendor Part Number	Description/ Mfg ID	Req Date/ Taxable	Req Qty/ Unit of Measure	Ship Method	Unit Price	Extended Price
1	62181	D3691-1 STUD	3/29/2011 Yes	11.00	Yours ppd	\$7.7272	\$85.00
		Special Inst:	LIQUID PENETRANT INSPECTION AS PER QSI 038 OR LPI AS PER ASTM 1417 LEVEL 2				
2	67351	D212-664-101 CROSSTUBE	3/29/2011 Yes	1.00	Yours ppd	\$85.0000	\$85.00
		Special Inst:	AS ABOVE				
3	67352	D212-664-101 CROSSTUBE	3/29/2011 Yes	1.00	Yours ppd	\$85.0000	\$85.00
		Special Inst:	AS ABOVE				

No substitution or deviation without  
consent.  
Certificate of Conformity or Material  
Certification required when applicable

Change Nbr: 1

Change Date: 3/29/2011







## LIQUID PENETRANT TEST REPORT

P- 12233

CLIENT	<u>DAVE Aerospace</u>	DATE	<u>March 29-2011</u>	PAGE	<u>1</u>	OF	<u>2</u>
ATTENTION	<u>LINDA LACELLE</u>	ACUREN JOB NO.	<u>188-11-02066</u>	TIME	AM <input checked="" type="checkbox"/>	PM <input type="checkbox"/>	
ADDRESS	<u>1270 ABELDEEN ST.</u>	POWOW NO.	<u>13734</u>				
	<u>HAWKESBURY, ON.</u>	WORK LOCATION	<u>HAWKESBURY</u>				
	<u>KGA LK7</u>	ACCEPTANCE STD.	<u>ASTM 1417/MS-038</u>	REV./DATE	<u>2005</u>		
PROJECT	<u>F.P.I. ON</u>	<u>CROSS TUBE 3</u>					
ITEM(S) EXAMINED		<u>(7)</u>					

JOB DESCRIPTION	PROCEDURE NO.	LT <u>002</u>	REV./DATE	<u>2008</u>	TECHNIQUE NO.	LT <u>002</u>	REV./DATE	<u>2008</u>
PART NO.		MATERIAL	<u>ALUMINE ALUMINUM</u>	THICKNESS	<u>VARIOUS</u>			
SCOPE	<u>WET FLUORESCENT LIQUID PENETRANT INSPECTION.</u> <u>CARRIED OUT ON 100% EXTERNAL SURFACE.</u>							

TEST DETAILS	
METHOD	<input checked="" type="checkbox"/> FLUORESCENT <input type="checkbox"/> VISIBLE
FAMILY BRAND	<u>MAGNAFLUX</u>
PENETRANT	<u>2407</u> MINIMUM DWELL TIME <u>45</u> MIN.
PENETRANT REMOVER	<u>H2O</u> MINIMUM DRY TIME <u>&gt;10</u> MIN.
DEVELOPER	<u>SK052</u> MINIMUM DWELL TIME <u>10</u> MIN.
DEVELOPER TYPE	<input checked="" type="checkbox"/> NON AQUEOUS <input type="checkbox"/> AQUEOUS <input type="checkbox"/> DRY
	<input checked="" type="checkbox"/> WATER WASH <input type="checkbox"/> SOLVENT REMOVABLE <input type="checkbox"/> POST EMULSIFIED
	BLACK LIGHT S/N <u>16459</u> <input checked="" type="checkbox"/> OUTPUT > 1000 $\mu$ W/cm <sup>2</sup> <input type="checkbox"/> AMBIENT < 2 fc
	LIGHTING EQUIP. <input type="checkbox"/> FLASHLIGHT <input type="checkbox"/> TROUBLELIGHT <input type="checkbox"/> OUTPUT > 100 fc @ SURFACE
	OTHER <u>LABINO</u>
	LIGHT METER S/N <u>1098866</u> CAL DUE DATE <u>OCT-19</u>
	<u>2011</u>

TEST SURFACE	
SURFACE CONDITION	<input type="checkbox"/> AS GROUND <input type="checkbox"/> AS WELDED <input checked="" type="checkbox"/> MACHINED <input type="checkbox"/> SHOT BLASTED <input checked="" type="checkbox"/> CLEAN BARE METAL
SURFACE TEMPERATURE	<input type="checkbox"/> < -4°C/ 20°F <input type="checkbox"/> -4°C/ 20°F TO 10°C/50°F <input type="checkbox"/> 10°C/50°F TO 52°C/125°F <input type="checkbox"/> > 52°C/125°F

RESULTS-	<input type="checkbox"/> METRIC <input type="checkbox"/> IMPERIAL
1 - Cross Tube # W.O. <u>67235</u>	✓
1 - Cross Tube # W.O. <u>67351</u>	✓
1 - Cross Tube # W.O. <u>67352</u>	✓
1 - Cross Tube # W.O. <u>67238</u>	✓
1 - Cross Tube # W.O. <u>67237</u>	✓
1 - Cross Tube # W.O. <u>67236</u>	✓
1 - Cross Tube # W.O. <u>67433</u>	✓
INDICATIONS TO BE REMOVED	
ET 11-03-30	
INDICATIONS TO BE REMOVED	
INDICATIONS TO BE REMOVED	

Scope of Services  
The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

Standard of Care  
In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

SIGNATURES	
CLIENT REPRESENTATIVE	<u>Zan Titley</u>
TECHNICIAN (SIGNATURE):	<u>[Signature]</u>
NAME (PRINT):	<u>Mike Johnson</u>
CGSB LEVEL	<u>2</u> SNT LEVEL
CGSB REG. NO.	<u>6606</u>
DTR #	<u>E-63781</u>
REPORT REVIEWED BY:	
NAME	INITIALS
CGSB LEVEL	<u>2</u> SNT LEVEL
CGSB REG. NO.	





## LIQUID PENETRANT TEST REPORT

P- 12234

PAGE 1 OF 1

CLIENT DMT AeroSpace DATE MARCH 30-2011 TIME AM ☒ PM ☐  
ATTENTION LINDA LACELLE ACUREN JOB NO. 188-11-02067  
ADDRESS 1270 ABERDEEN ST. PO/VO NO. 13743  
HAWKES BURY ON. WORK LOCATION HAWKES BURY  
K6A 1K7 ACCEPTANCE STD. ASTM 1417/051-038 REV./DATE 2005  
PROJECT F.P.I. on CROSS TUBES & SLEEVES  
ITEM(S) EXAMINED (6) (8)

JOB DESCRIPTION WET FLUORESCENT LIQUID PENETRANT INSPECTION PROCEDURE NO. LT002 REV./DATE 2008 TECHNIQUE NO. LT002 REV./DATE 2008  
PART NO. — MATERIAL ALUMINUM THICKNESS VARIOUS  
SCOPE CARRIED OUT ON 100% EXTERNAL SURFACE

TEST DETAILS  
METHOD ☒ FLUORESCENT ☐ VISIBLE ☒ WATER WASH ☐ SOLVENT REMOVABLE ☐ POST EMULSIFIED  
FAMILY BRAND MAGNA FLUX BLACK LIGHT S/N 16459 OUTPUT > 1000  $\mu$ W/cm<sup>2</sup> ☐ AMBIENT < 2 fc  
PENETRANT 2L07 MINIMUM DWELL TIME 45 MIN. LIGHTING EQUIP. ☐ FLASHLIGHT ☐ TROUBLELIGHT ☐ OUTPUT > 100 fc @ SURFACE  
PENETRANT REMOVER M70 MINIMUM DRY TIME >10 MIN. OTHER LABINO  
DEVELOPER SKD52 MINIMUM DWELL TIME 10 MIN. LIGHT METER S/N 1098806 CAL DUE DATE 06/19/2011  
DEVELOPER TYPE ☒ NON AQUEOUS ☐ AQUEOUS ☐ DRY

TEST SURFACE  
SURFACE CONDITION ☐ AS GROUND ☐ AS WELDED ☐ MACHINED ☐ SHOT BLASTED ☒ CLEAN BARE METAL  
SURFACE TEMPERATURE ☐ < -4°C/20°F ☐ -4°C/20°F TO 10°C/50°F ☒ 10°C/50°F TO 52°C/125°F ☐ > 52°C/125°F

RESULTS- (☐ METRIC ☒ IMPERIAL)

1 CROSS TUBE W.O. 67235 ✓  
1 CROSS TUBE W.O. 67236 ✓  
1 CROSS TUBE W.O. 67433 ✓  
8 SLEEVE W.O. 65346 ✓  
1 CROSS TUBE W.O. 67438 ✓  
1 CROSS TUBE W.O. 67437 ✓  
1 CROSS TUBE W.O. 67434 ✓

PREVIOUS INDICATIONS FROM  
MARCH 30-2011 REPORT # P12233  
ON THESE CROSSTUBES HAVE  
BEEN REMOVED

BT 11-0330

## Scope of Services

The agreement of Acuren Group Inc. to perform services extends only to those services provided for in writing. Under no circumstances shall such services extend beyond the performance of the requested services. It is expressly understood that all descriptions, comments and expressions of opinion reflect the opinions or observations of Acuren Group Inc. based on information and assumptions supplied by the owner/operator and are not intended nor can they be construed as representations or warranties. Acuren Group Inc. is not assuming any responsibilities of the owner/operator and the owner/operator retains complete responsibility for the engineering, manufacture, repair and use decisions as a result of the data or other information provided by Acuren Group Inc. In no event shall Acuren Group Inc.'s liability in respect of the services referred to herein exceed the amount paid for such services.

## Standard of Care

In performing the services provided, Acuren Group Inc. uses the degree, care and skill ordinarily exercised under similar circumstances by others performing such services in the same or similar locality. No other warranty, expressed or implied, is made or intended by Acuren Group Inc.

## SIGNATURES

CLIENT REPRESENTATIVE Linda Titley DTR # E-63782  
TECHNICIAN (SIGNATURE): Mike Johnston SIGNATURE [Signature]  
NAME (PRINT): Mike Johnston REPORT REVIEWED BY: [Signature]  
1<sup>st</sup> TECHNICIAN 2<sup>nd</sup> TECHNICIAN  
CGSB LEVEL 2 SNT LEVEL — CGSB LEVEL — SNT LEVEL —  
CGSB REG. NO. 6606 CGSB REG. NO. —

